AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) An analyte sensor, comprising:

a working electrode; and

a biocompatible membrane disposed over the electrode, the biocompatible membrane comprising a silicone composition comprising a hydrophile incorporated therein, wherein the silicone composition is configured to resist diffusion of an analyte through the biocompatible membrane, and wherein the silicone composition comprises a silicone polymer comprising an alternating silicon and oxygen atom backbone, wherein terminal groups of the backbone are selected from ~~optionally substituted~~ alkyl, alkenyl, aryl or aralkyl moieties optionally substituted with one or more substituents selected from the group consisting of hydroxy, alkoxy, alkylsulfonyl, halogen, cyano, nitro, amino, and carboxyl.

2. (CURRENTLY AMENDED) The ~~biocompatible membrane~~analyte sensor of claim 1, wherein the silicone composition comprises a hydrophile grafted therein.

3. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, ~~comprising~~ wherein the biocompatible membrane comprises two or more domains.

4. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ a cell disruptive domain, wherein the cell disruptive domain supports tissue ingrowth and interferes with barrier-cell layer formation.

5. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 4, wherein the cell disruptive domain comprises the silicone composition.

6. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 5, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

7. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ a cell impermeable domain, wherein the cell impermeable domain is resistant to cellular attachment and is impermeable to cells and cell processes.

8. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 7, wherein the cell impermeable domain comprises the silicone composition.

9. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 8, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

10. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ a resistance domain, wherein the resistance domain controls a flux of oxygen and glucose through the membrane.

11. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 10, wherein the resistance domain comprises the silicone composition.

12. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 11, wherein the silicone composition comprises from about 1 wt. % to about 20 wt. % of the hydrophile.

13. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ an enzyme domain, wherein the enzyme domain comprises an immobilized enzyme.

14. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 13, wherein the immobilized enzyme comprises glucose oxidase.

15. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 13, wherein the enzyme domain comprises the silicone composition.

16. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 15, wherein the silicone composition comprises from about 1 wt. % to about 50 wt. % of the hydrophile.

17. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ an interference domain, wherein the interference domain substantially prevents the penetration of one or more interferents into an electrolyte phase adjacent to an electrochemically reactive surface.

18. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 17, wherein the interference domain comprises an ionic component.

19. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 17, wherein the interference domain comprises the silicone composition.

20. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 19, wherein the silicone composition comprises from about 1 wt. % to about 10 wt. % of the hydrophile.

21. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the biocompatible membrane comprises ~~comprising~~ an electrolyte domain, wherein the electrolyte domain comprises a semipermeable coating that maintains hydrophilicity at an electrochemically reactive surface.

22. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 21, wherein the electrolyte domain comprises the silicone composition.

23. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 22, wherein the silicone composition comprises from about 1 wt. % to about 50 wt. % of the hydrophile.

24. (CURRENTLY AMENDED) An implantable biosensor comprising a biocompatible membrane comprising a silicone composition comprising a hydrophile incorporated therein, wherein the silicone composition is configured to resist diffusion of an analyte through the biocompatible membrane, and wherein the silicone composition comprises a silicone polymer comprising an alternating silicon and oxygen atom backbone, wherein terminal groups of the backbone are selected from alkyl, alkenyl, aryl or aralkyl moieties optionally substituted with one or more substituents selected from the group consisting of hydroxy, alkoxy, alkylsulfonyl, halogen, cyano, nitro, amino, and carboxyl.~~the biocompatible membrane of claim 1~~.

25. (CURRENTLY AMENDED) An implantable drug delivery device comprising a biocompatible membrane comprising a silicone composition comprising a hydrophile incorporated therein, wherein the silicone composition is configured to resist diffusion of an analyte through the biocompatible membrane, and wherein the silicone composition comprises a silicone polymer comprising an alternating silicon and oxygen atom backbone, wherein terminal groups of the backbone are selected from alkyl, alkenyl, aryl or aralkyl moieties optionally substituted with one or more substituents selected from the group consisting of hydroxy, alkoxy, alkylsulfonyl, halogen, cyano, nitro, amino, and carboxyl~~the biocompatible membrane of claim 1~~.

26-134. (CANCELED)

135. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 13, wherein the silicone composition has an oxygen-to-analyte permeability ratio such that oxygen is provided to the immobilized enzyme in a non-rate-limiting excess for an enzyme-catalyzed reaction between oxygen and the analyte.

136. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 135, wherein the oxygen-to-analyte permeability ratio is approximately 200:1.

137. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 135, wherein the biocompatible membrane comprises ~~comprising~~ a resistance domain, wherein the resistance domain comprises the silicone composition.

138. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the silicone composition comprises a hydrophile covalently incorporated therein.

139. (CURRENTLY AMENDED) The analyte sensor ~~biocompatible membrane~~ of claim 1, wherein the analyte is glucose.

140. (NEW) The analyte sensor of claim 1, wherein the silicone composition is configured to resist diffusion of the analyte to an extent such that the sensor has a substantially linear response with respect to concentration of the analyte up to analyte concentrations of at least about 500 mg/dL.

141. (NEW) The analyte sensor of claim 1, wherein the hydrophile has a molecular weight from about 200 to about 1200 g/mol.

142. (NEW) The analyte sensor of claim 1, wherein the silicone composition comprises from about 1 wt. % to about 19 wt. % of the hydrophile.

143. (NEW) The analyte sensor of claim 1, wherein the silicone composition comprises from about 1 wt. % to about 10 wt. % of the hydrophile.

144. (NEW) The analyte sensor of claim 1, wherein the silicone composition comprises from about 1 wt. % to about 8 wt. % of the hydrophile.